

A REVISION OF THE VESPIDAE (HYMENOPTERA,
DIPLOPTERA) OF CHILE

PART II. SUBFAMILY EUMENINAE. GENUS
HYPODYNERUS.

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All Chilean wasps not studied in Part I of this paper, belong in Eumaninae. The present instalment covers the members of the genus *Hypodynerus*.

SUBFAMILY EUMENINAE

Hypodynerus H. de Saussure

Odynerus subg. *Odynerus* division *Hypodynerus* H. de Saussure, 1855, Et. Fam. Vesp., III, p. 225; for *Leionotus* II^e division of de Saussure, 1853, Et. Fam. Vesp., I, p. 160, to include some fifteen species. Type by present designation: *Odynerus humeralis* Haliday, 1836, one of the species included in 1855.

Leionotus Ashmead, 1902, Canad. Entom., XXXIV, p. 209. Type by original designation: *Odynerus humeralis* Haliday, 1836. Not of de Saussure, 1853 (which did not include *O. humeralis*), nor of Kirby and Spence, 1828.

The characters and relationships of *Hypodynerus* will be discussed more fully elsewhere. The genus contains medium-sized to large wasps (fore wing 7 to 18 mm. long), without transverse suture or ridge on the first tergite; mesopleura without prepectal suture; anterior slope (or neck) of pronotum with a median pair of shallow transverse depressions, sometimes more or less confluent; second sternite of abdomen never with a median longitudinal furrow, the base flattened, or evenly convex, or raised into a transverse welt or obtuse cone.

As here understood, *Hypodynerus* includes all Chilean Eumeninae except the following: *Odynerus pavidus* Kohl, *Odynerus scabriusculus* Spinola, *Odynerus ambiguus* Spinola, *Odynerus gayi* Spinola, *Odynerus peruensis* H. de Saussure, *Alastor oliveri* Ruiz and *Odynerus angulicollis* Spinola. (1).

(1) These species are listed here under the generic names used in the original descriptions. They will be referred to the correct genera in Part III of this revision.

Key to Chilean *Hypodynerus*

1. Tegulae and most of pronotum rufous or reddish. Abdomen normally with two creamy-white fasciae. Second tergite not humped 2.
- Tegulae black or rufous; pronotum black, with or without creamy-white markings 5.
2. Base of second sternite flat or gently sloping. First segment much narrower than second; postpetiole with a slight median hump at the edge of the anterior slope. Antennae rufous over scape and basal half of flagellum, black over apical portion. Clypeus black in female, ivory-white in male. Postscutellum partly ivory-white in female, black in male
. *H. tuberculatus*.
- Base of second sternite swollen into a strong transverse welt or blunt cone. First segment not or slightly narrower than base of second; postpetiole not humped medially at the edge of the slope 3.
3. Antennae entirely reddish. Clypeus of female rufous with black margins. Propodeum with a shallow concavity, the lateral ridges obsolete and rounded off. (Male unknown). *H. ruficollis*.
- Antennae rufous over scape and base of flagellum, black over apical portion. Propodeum with fairly deep concavity, the lateral ridges distinct and somewhat crenulate 4.
4. Wings almost uniformly pale rufous-reddish, slightly grayish toward apex. Mandibles without or with superficial teeth. Clypeus red in female; in the male pale yellow, scarcely emarginate at apex and with short lateral angles. Mid femora of male strongly deformed. *H. humeralis*.
- Wings rufous-red basally and along costa, strongly violaceous-black apically. Inner margin of mandible distinctly toothed. Clypeus black in female; in the male pale yellow, semi-circularly emarginate at apex with sharp lateral teeth. Mid femora of male normal. *H. chiliensis*.
5. Second tergite distinctly swollen medially into a low, more or less conical hump. 6.
- Second tergite not humped medially, gently and evenly convex throughout 7.
6. First tergite distinctly swollen into a small median hump at the edge between postpetiole and anterior slope, mostly covered with coarse punctures. Anten-

- nae very extensively reddish, only the apical segments somewhat infusate *H. porteri*.
 First tergite slightly swollen throughout at the edge between postpetiole and anterior slope, but not more so in the middle than at the sides, the punctures medium-sized and scattered. Antennae mostly black, only the under side of some of the basal segments reddish *H. colocolo*.
7. Antennae entirely or mostly black; sometimes scape and basal segments (as far as the fifth) partly reddish (usually on the under side only). Clypeus of female black 8.
 Antennae entirely or mostly reddish, both above and below; at most some of the apical segments (beyond the seventh) blackish above 10.
8. Base of second sternite gently sloping. Pronotum with at most the hind margin narrowly ivory-white *H. excipiendus*.
 Base of second sternite swollen into a strong transverse welt or blunt cone 9.
9. Wings uniformly violaceous-black. Propodeum with deep concavity and crested lateral ridges. Clypeus of both sexes with microscopic sculpture only *H. obscuripennis*.
 Wings distinctly tinged with ferruginous or orange-yellow at base and along costa, the darker areas moderately infusate. Propodeum with shallow concavity and the lateral ridges rounded off. Clypeus of both sexes coarsely punctate *H. vestitus*. (2).
10. Second sternite either almost flat or evenly convex, gently sloping at base 11.
 Second sternite strongly raised or swollen into a transverse welt or obtuse cone, abruptly sloping at base 12.
11. First abdominal segment scarcely or slightly narrower than second, not stalk-like. Second sternite rather strongly, though evenly convex at base. Clypeus at most as long as wide in both sexes. Lateral ridges of propodeum slightly crested and somewhat crenulate *H. caupolicanus*.
 First abdominal segment markedly narrower than

(2) *H. vestitus* is a Peruvian species not known with certainty from our territory. It is included in the key on the possibility that it might yet be found in northern Chile. It will be discussed in Part III, among the doubtful species.

- second, stalk-like; the edge between postpetiole and basal slope swollen. Second sternite scarcely convex and slightly depressed medially at base. Clypeus longer than wide in both sexes. Lateral ridges of propodeum rounded off, *H. coarctatus*.
12. Lateral ridges of propodeum distinctly crested and more or less produced at the lateral angles, where they often form (in the female) broad, triangular teeth, with rounded apex. First abdominal segment scarcely narrower than second, not stalk-like. Clypeus of female black 13.
- Lateral ridges and angles of propodeum broadly rounded off, scarcely marked. 14.
13. Humeral margin of pronotum strongly raised as a the straight translucent ridge, scarcely interrupted middle; its horizontal areas sparsely punctate, often almost smooth anteriorly. Tegulae and all or most of femora red. Wings mostly ferruginous-orange, moderately infusate at apex. Clypeus of male with deep, semielliptical emargination at apex
. *H. chilotus*.
- Humeral margin of pronotum without translucent ridge, with a fine raised line; its horizontal areas coarsely punctate throughout. Tegulae and all or most of femora black. Wings more extensively violaceous-black, the ferruginous-orange color restricted to the basal third or less. Clypeus of male very slightly curved inward at apex. *H. villosus*.
14. First abdominal segment very short and broad; postpetiole very short, as wide as base of second segment, usually with a mere trace of median pit; edge between postpetiole and basal slope somewhat depressed medially. Thorax with weak, well-separated punctures. Pronotum black or with the hind margin more or less ivory-white. Clypeus of both sexes with uniformly scattered, small punctures; that of male deeply emarginate, bidentate *H. vespiformis*.
- First abdominal segment elongate, more or less stalk-like and always somewhat narrower than second; edge between postpetiole and basal slope swollen and followed by a strong median pit. Pronotum either black or with the humeral margin ivory-white . . . 15.
15. Small species (fore-wing 6 to 8 mm. long). Postscutellum usually with a white fascia. Protuberance of second sternite more in the shape of a transverse ridge. Clypeus black, emarginate at apex and dis-

- tinctly punctate all over in female; creamy-white and bidentate at apex in male . . . *H. tuberculiventris*. Large species (fore wing 8 to 14 mm. long). Postscutellum usually black. Protuberance of second sternite more conical. Clypeus of female usually partly reddish, rarely black, mostly impunctate; that of male creamy-white and shallowly curved inward at apex 16.
16. Clypeus of female distinctly narrowed apically, the edge produced and with prominent, bluntly rounded angles bearing blunt ridges which extend to mid-length of the clypeus; of male-nearly one and one-half times as long as greatest width . . . *H. labiatus*. Clypeus of female without narrowed, produced apical edge, the lateral angles flat and very broadly rounded off; of male only slightly longer than greatest width *H. lachesis*.

Hypodynerus caupolicanus (E. C. Reed)

Odynerus caupolicanus E. C. Reed, 1893, An. Univ. Chile, LXXXIV, Mem. Cientif. Lit., p. 889 (male; Chile: near Rengo); 1894, Proc. Zool. Soc. London (1893), p. 687 (female; locality here given as "Cauquenes Baths"). Dalla Torre, 1904, Gen. Insect., Vesp., p. 42.

Odynerus (Ancistrocerus) caupolicanus Porter, 1904, Rev. Chilena Hist. Nat., VIII, p. 195.

Odynerus sotoi E. C. Reed, 1893, An. Univ. Chile, LXXXIV, Mem. Cientif. Lit., p. 895 (in part.: female only; Chile: Copiapó); 1894, Proc. Zool. Soc. London, (1893), p. 689 (in part. female only). Dalla Torre 1904, Gen. Insect., Vesp., p. 54.

Odynerus (Lionotus) sotoi Porter, 1904, Rev. Chilena Hist. Nat., VIII, p. 197.

The holotype (male) of *caupolicanus* and the holotype (female) and allotype (male) of *sotoi*, bearing E. C. Reed's original labels, in his own hand, are now at the Museum of Comparative Zoology, Cambridge, Mass. They were studied by the senior author (J. B.). The male *O. caupolicanus* is readily recognized among the Chilean *Hypodynerus*, clypeus and antennae (Fig. 1 A-C) being characteristic. The female and male described by Reed as *O. sotoi*, belong to two distinct species, only superficially alike in color. The male is a typical *Ancistrocerus*, with a distinct, continuous, straight transverse carina on the first tergite; it also differs in the structure of postscutellum and propodeum.

The identity of this male will be established later. The holotype of *sotoi* is certainly the female on which the main description was based, the male being mentioned only in a short concluding paragraph. This female is readily recognizable as that of *H. caupolicanus*, with which it agrees in all structural characters and most color markings. The clypeus (Fig. 1 D) is not entirely ferruginous, as stated by Reed, but mostly dirty-yellow, (probably faded), with the apical third reddish. Reed's remark that "la segunda faja abdominal es interrumpida en el medio", refers to the second sternite. The locality on the label of the holotype of *caupolicanus* is "Rengo"; on that of the holotype of *sotoi*, "Copiapó". These two specimens are profusely marked with sulphur yellow (not ivory-white) over humeral half of pronotum (including part of the anterior slope), a spot in the upper mesopleura, entire tegulae, a pair of spots on scutellum and postscutellum (small in male, very large or fused into a band in female), a spot on dorsal areas of propodeum (small in male, very large in female), very broad apical bands on first, second and third tergites and on second sternite (the band of the sternite interrupted in the male), apical spots on the sides of third sternite, a narrow streak along upper outer orbits and a small frontal spot near antennae; in the female there is a minute free yellow dot on each side of the second tergite and some trace of yellow along the apex of the fourth tergite. Clypeus entirely yellow in male, partly reddish and yellow in female (as described above). Mandibles, antennae, femora, tibiae and tarsi reddish; under side of scape of male yellow. Wings fairly uniformly and strongly tinged with yellow; only the radial cell somewhat infuscate and purplish. Length of fore wing 11 mm. in both sexes. These are the only Chilean *Hypodynerus* we have seen in which the tegulae are yellow, not ferruginous.

We have also seen from Chile a few wasps which we are unable to separate from the types of *H. caupolicanus* on structural characters, although they are strikingly different in color. As a rule, we do not favor the naming of color variants in Chilean wasps; but we feel obliged to make an exception in this case, in order to avoid confusion. Moreover, we have not seen the male of one of the color forms (var. *herbsti*) and it is possible that structural differences may be found in that sex, raising it to specific rank.

H. caupolicanus var. (or subsp.) *herbsti*, new (Fig. 1 E).

Female.—Structurally like typical *H. caupolicanus* (Reed), but smaller. Black, with creamy-white markings as follows: a large spot on clypeus (sometimes only narrow margins and broad apex black), under side of scape (sometimes lacking), a frontal spot, a line along upper outer orbits, humeral half of pronotum, a spot in upper mesopleura (sometimes lacking), two spots on scutellum (sometimes

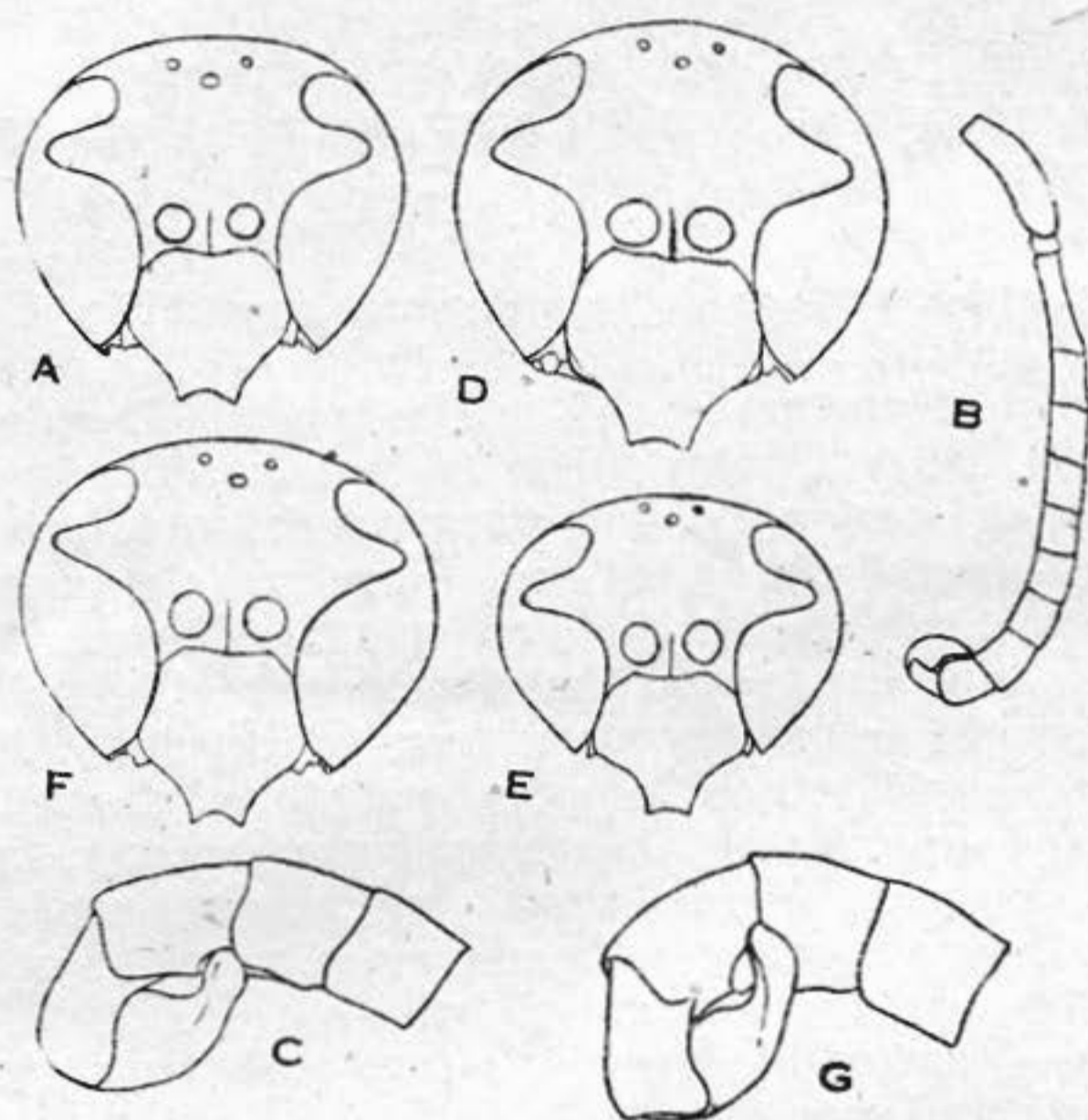


Fig. 1. A-C, *Hypodynerus caupolicanus* (E. C. Reed), male holotype: A, head in front view; B, antenna; C, apical segments of antenna from below. D, *H. caupolicanus*, female allotype (holotype of *O. sotoi* E. C. Reed), head in front view. E, *H. caupolicanus* var *herbsti* J. Bequaert and F. Ruiz, female holotype head in front view. F—G, *H. caupolicanus* var. *cerberus* J. Bequaert and F. Ruiz, male allotype: F, head in front view; G, apical segments of antenna from below.

fused), a spot on dorsal areas of propodeum (sometimes lacking), broad apical fasciae on first two, three, four or five tergites, and apical spots at sides of second sternite; in holotype and one paratype, the apex of fore tibiae, the outer side of mid femora and the under side of mid and hind coxae are spotted with ivory-white. Mandibles, antennae, tegulae, femora, tibiae and tarsi orange red; sometimes

the tegulae are slightly yellowish along the inner edge. Wings tinged with yellow, as in typical form.

Length (h. + th. + t. 1 + 2), 8 to 9 mm.; of fore wing, 8.5 to 9.5 mm.

CHILE: Valparaíso, female holotype and female paratype, November 28, 1922 (P. Herbst); Concepción, female paratype (P. Herbst); Marga-Marga, female paratype (P. Herbst). Holotype and paratypes at Museum of Comparative Zoölogy, Cambridge, Mass.; paratype also in collection F. Ruiz P.

The smaller size, red tegulae and creamy-white (not yellow) markings differentiate var. *herbsti* from typical *caupolicanus*.

H. caupolicanus var (or subsp.) *cerberus*, new (Fig. 1 F-G)

Female.—Structurally and in size typical *H. caupolicanus* (Reed), but strikingly different in color. Black, either with only an ivory-white line along upper outer orbits or with the humeral margin of the pronotum also narrowly white (sometimes in the middle only). Clypeus black (holotype and paratype from Termas de Chillán); or mostly ferruginous-red (paratype from Concepción). Entire antennae, apical teeth of clypeus, mandibles, frontal dot, tegulae and legs (except coxae and trochanters), bright ferruginous-orange. Wings almost uniformly tinged with orange-red, very slightly infusate apically; veins reddish in basal half, brownish in apical half.

Male.—Exactly like female, except that the clypeus is almost entirely ivory-white.

Length (h. + th. + t. 1 + 2), 9 to 10 mm.; of fore wing, 9.5 to 11 mm.

CHILE: Termas de Chillán, female holotype and female paratype, January 28, 1934, and February 11, 1935 (F. Ruiz); Concepción, male allotype and female paratype (P. Herbst). Holotype in collection F. Ruiz P.; allotype and paratypes at Mus. Comp. Zoöl., Cambridge, Mass.

Probably the specimens labelled "Concepción" by Herbst were taken somewhere in the mountains of the Province Concepción.

This differs so strikingly in color from typical *caupolicanus* that one may be tempted to regard it as a distinct species. Yet we are unable to find any difference in sculpture or structure. The shape of the clypeus (Fig. 1 F) and antennal hook of the male (Fig. 1 G) are the same.

Hypodynerus chiliensis (Lepelletier)

Odynerus chiliensis Lepelletier, 1841, Hist. Nat. Ins. Hym., II, p. 643 (female; Chile).

Odynerus chilensis Spinola, 1851, in Gay, Historia Fis. Pol. Chile, Zool., VI, p. 255 (female, male; "en varias partes de la República"; allotype male).

Odynerus (Leionotus) chilensis H. de Saussure, 1853, Et. Fam. Vesp., I, p. 166, Pl. XVII, figs. 6-6a (female, male).

Odynerus (Hypodynerus) chilensis Zavattari, 1912, Arch. f. Naturgesch., LXXVIII, Abt. A, Heft 4, p. 231 (female, male; Parral, Concepción; Los Canelos, Longaví, 2,000 m.; Guarearhue, Caupolicán, Puente de Cienaguillos, 2,500 m.).

Odynerus gigas "Spinola" Zavattari, 1912, Arch. f. Naturgesch., LXXVIII, Abt. A, Heft 4, p. 231 (as a synonym of *O. chilensis*).

Odynerus (Hypodynerus) humeralis H. de Saussure, 1855, Et. Fam. Vesp., III, p. 228 (in part); 1875, Smithson. Miscell. Coll., N.º 254, p. 223 (female, male). Not of Haliday, 1836.

Odynerus humeralis F. Smith, 1857, Cat. Hym. Brit. Mus., V, p. 77. E. C. Reed, 1893, An. Univ. Chile, LXXXIV, Mem. Cientif. Lit., p. 890; 1894, Proc. Zool. Soc. London, (1893), p. 688. Dalla Torre, 1894, Cat. Hym., IX, p. 73 (in part), Gribodo, 1895, Actes Soc. Scientif. Chili, IV, (1894), p. 200. Ruiz, 1924, Rev. Chilena Hist. Nat., XXVII, (1923), p. 103 (San Cristóbal). F. Claude Joseph, 1924, An. Univ. Chile, (2) II, Art. Cientif. Lit., p. 1088, figs. I and XIV-XXVI; 1930, Ann. Sci. Nat., Zool., (10) XIII, pt. 2, pp. 303-313, figs. 36-50 (Santiago). Edwards, 1930, Diptera of Patagonia and S. Chile, V, pt. 2, p. 120, footnote (mimicry of the fly *Heterostomus brevipalpis* Bigot). Ruiz, 1937, Rev. Chilena Hist. Nat., XL, (1936), p. 164 (female, male; Valle del Choapa; Vicuña; Illapel; Elqui, Prov. Coquimbo, in the Cordillera as high as 3,200 m.). Fraga, 1938, *Op. cit.*, XLI, (1937), p. 200 (Hacienda "Mauro", Illapel).

Odynerus (Leionotus) humeralis Dalla Torre, 1904, Gen. Insect., Vesp., p. 47 (in part). Porter, 1904, Rev. Chilena Hist. Nat., VIII, p. 195.

A common species in Chile, where it is apparently distributed throughout the country. We have seen it from Santiago; Limache; Angol; Quillota; Valparaíso; Baños de

Cauquenes; Concepción; El Canelo; Cerro San Cristóbal; Vicuña; A. de C. Queñes; Maipú; and Gualañe (Curicó).

True *chiliensis* is not known outside Chile. It has usually been called *humeralis* by Chilian entomologists; but, as shown by Zavattari (1912), Haliday's *humeralis* is a very different species, not taken thus far in Chile. In addition to the characters given in the key, the shape of the transverse welt of the second sternite is very different, as well as the structure of the male antennal hook and seventh sternite.

The habits were described by Hermano Claude-Joseph (as *humeralis*). The female builds free clay-cells, as many as 15 together in a bunch, attached to a branch of a bush. The whole bunch of cells is finally plastered over with mud so as to form an almost spheroidal mass. If the cells are built on a wall, the mass is more or less hemispherical. The egg hangs from the ceiling and 8 or 9 caterpillars are stored in the cell before it is closed. *Chrysis chilensis* Spinola is a common parasite.

Lepelletier's type (female) was seen by de Saussure, and should now be at the Paris Museum. The allotype (male), described by Spinola in 1851, should be in his collection at the Turin Museum; it is most probably the specimen of Spinola's collection mentioned by Zavattari as bearing a manuscript name "*O. gigas* m." Spinola stated that the male of this species is "muy notable por lo grande de su talla".

Hypodynerus chilotus (H. de Saussure)

Odynerus chilotus H. de Saussure, 1851, in Gay, Historia Fis. Pol. Chile, Zool., VI, p. 566 (male; Chile: "las provincias centrales"). F. Smith, 1857, Cat. Hym. Brit. Mus., V, p. 77. E. C. Reed, 1893, An. Univ. Chile, LXXXIV, Mem. Cientif. Lit., p. 892 (male); 1894, Proc. Zool. Soc. London, (1893), p. 688. Dalla Torre, 1894, Cat. Hym., IX, p. 59. Brèthes, 1906, An. Mus. Nac. Buenos Aires, (3) VI, p. 366 (Cerro Muñoz, 4,100 m., Tucumán, Argentina); 1909, *Op. cit.*, XIX, p. 104 (Puente del Inca and Las Cuevas, Mendoza, Argentina).

Odynerus (Leionotus) chilotus H. de Saussure, 1853, Et. Fam. Vesp., I, p. 167 (male).

Odynerus (Hypodynerus) chilotus H. de Saussure, 1855, Et. Fam. Vesp., III, pp. 226 and 229; 1875, Smithson. Miscell. Coll., N. 254, p. 226 (male). Brèthes, 1903, An. Mus. Nac. Buenos Aires, IX, p. 292 (female, male).

Zavattari, 1912, Arch. f. Naturg., LXXVIII, Abt. A, Heft 4, p. 227.

Odynerus (Lionotus) chilotus Dalla Torre, 1904, Gen. Insect., Vesp., p. 42. Porter, 1904, Rev. Chilena Hist. Nat., VIII, p. 195.

Hypodynerus chilotus Jörgensen, 1912, An. Mus. Nac. Buenos Aires, XXII, p. 297 (Mendoza).

?*Odynerus (Hypodynerus) chilotus* var. *unicinctus*, Zavattari, 1912, Arch. f. Naturg., LXXVIII, Abt. A, Heft 4, pp. 223 and 227 (female; Cordillera of Mendoza, Argentina).

We have not included in the foregoing references Brèthes' record from Arequipa, Perú (1920, An. Soc. Cientif. Argentina, LXXXIX, p. 50). The senior author (J. B.) has seen several wasps from Perú (Arequipa and Puno), which, though closely related to *chilotus* (notably in the shape of the propodeum), differ in the uniformly coarse punctation of the horizontal areas of the pronotum and in the low humeral ridge, as well as in the shape of the antennal hook of the male.

True *chilotus* appears to be very rare. We have seen two females from Herbst's collection, labelled "La Calera, Caquis, 2,000 m., April 20, 1922"; and one female from Concumen, Valle del Choapa, Prov. Coquimbo (Coll. Orellana). Also one male without definite locality and one from Valparaíso. The broad, flat, blunt spines of the propodeum are characteristic.

Having seen no specimens from Argentina, we are unable to state positively that true *chilotus* occurs there.

The holotype (male) is probably at the Paris Museum.

Hypodynerus coarctatus (H. de Saussure)

Odynerus coarctatus H. de Saussure, 1851, in Gay, Historia Fis. Pol. Chile, Zool., VI, p. 565 (female; Chile). Dalla Torre, 1894, Cat. Hym., IX, p. 60. Herbst, 1921, Stettin. Ent. Zeitg., LXXXII, p. 107. F. Claude-Germain, 1930, Ann. Sci. Nat. Zool., (10) XIII, pt. 2, pp. 331-332 (mountains behind Santiago, between 2,000 and 3,000 m.). Ruiz, 1934, Revista Universitaria (Santiago de Chile), XIX, N.º 3, p. 290.

Odynerus (Lionotus) coarctatus Dalla Torre, 1904, Gen. Insect., Vesp., p. 42. Porter, 1904, Rev. Chilena Hist. Nat., VIII, p. 195 (Valparaíso).

Odynerus (Leionotus) subpetiolatus H. de Saussure, 1853, Et. Fam. Vesp., I, p. 162 (male; Chile).

Odynerus (Hypodynerus) subpetiolatus H. de Saussure, 1855, Et. Fam. Vesp., III, pp. 226 and 227; 1875, Smithson. Miscell. Coll., N.º 254, p. 220 (female, male).

Odynerus subpetiolatus F. Smith, 1857, Cat. Hym. Brit. Mus., V, p. 76. E. C. Reed, 1893, An. Univ. Chile, LXXXIV, Mem. Cientif. Lit., p. 887 (female, male); 1894, Proc. Zool. Soc. London (1893), p. 687. Delfin, 1900, Rev. Chilena Hist. Nat., IV, p. 20 (Dept. Talcahuano). Ruiz, 1924, Rev. Chilena Hist. Nat. XXVII, (1923), p. 103 (San Cristóbal). F. Claude-Joseph, 1924, An. Univ. Chile, (2) II, Art. Cientif. Lit., p. 1136, fig. XXXIV; 1930, Ann. Sci. Nat., Zool., (10) XIII, pt. 2, pp. 326-329, figs. 59-61 (Santiago; Temuco).

Nortonia subpetiolata Zavattari, 1912, Arch. f. Naturg., LXXVIII, Abt. A, Heft 4, p. 169 (female, male; Santiago).

H. de Saussure (1875, p. 221, footnote) claimed that the Supplement to vol. VI of Gay's work appeared after vol. I of the Etudes. So far as we can trace the entire vol. VI was published in 1851. Even if it were shown that the "Adición a los Himenópteros" (pp. 561-572) was issued in 1852, it would still antedate the fascicle of the Etudes in which *O. subpetiolatus* was described. According to F. J. Griffin (1939, Jl. Soc. Bibl. Nat. Hist., London, I, pt. 7, p. 211), pp. 129-192 of the "Etudes" were received at the British Museum March 5, 1853. They could not have been sent to the subscribers much earlier.

The type of *H. coarctatus* may have been one of the specimens seen by Zavattari in Spinola's collection at the Turin Museum. That of *H. subpetiolatus* is at the Paris Museum.

This is one of the most common wasps in Chile. We have seen specimens from Santiago; Peñalolén; Vicuña; Hacienda Las Mercedes; Viña del Mar, Resbalón; Rancagua; Concepción; Angol; Valparaíso; Provincia Bío-Bío; and Baños de Cauquenes. The senior author (J. B.) also saw a female from Argentina: Correntosa, Lake Nahuel-Huapi.

The habits were described by Hermano Claude-Joseph, for *coarctatus* and *subpetiolatus*, as if these were two species, which has never been claimed. The two accounts are so dissimilar that we believe they have been based on two distinct species, and it is impossible to tell which of the two refers to true *coarctatus*. Of his "*subpetiolatus*" he says that the female builds cells of clay inside preëxisting galleries. In North Chile the cells are placed in old galleries made by solitary bees (*Centris* and *Podalirius*) in adobe

walls, or sometimes in old nests of *Sceliphron* wasps. In South Chile the galleries or burrows made by *Cicada* larvae in the soil are preferred. The egg is hung from the wall in one of the upper corners of the cell. Caterpillars are stored as prey. Of "*coarctatus*", the female is said to build clay cells placed in the open on rocks; as many as 15 cells are congregated in one lump of clay. Inside the cell the larva spins four or five concentric silk cocoons as a protection against the cold, this type of cell being found in the Andes, at high altitude (2,000 to 3,000 m.).

Herbst (1921) claims that *O. mapochu* Gribodo was *coarctatus*; but we feel certain that *mapochu* is a synonym of either *H. labiatus* (Haliday) or *H. lachesis* (Lepeletier).

Hypodynerus colocolo (H. de Saussure)

Odynerus colocolo H. de Saussure, 1851, in Gay, Historia Fis. Pol. Chile, Zool., VI, p. 566 (female, male; Chile: "en las provincias centrales"). E. C. Reed, 1893, An. Univ. Chile, LXXXIV, Mem. Cientif. Lit., p. 886; 1894, Proc. Zool. Soc. London, (1893), p. 687. F. Claude-Joseph, 1930, Ann. Sci. Nat. Zool., (10) XIII, pt. 2, p. 332, fig. 63 (Temuco; Quebrada de Peñalolén near Santiago).

Odynerus (Leionotus) colocolo H. de Saussure, 1853, Et. Fam. Vesp., I, p. 161 (female, male).

Odynerus excipiens var. *colocolo* Dalla Torre, 1894, Cat. Hym., IX, p. 66.

Odynerus (Lionotus) excipiens var. *colocolo* Dalla Torre, 1904, Gen. Insect., Vesp., p. 44. Porter, 1904, Rev. Chilena Hist. Nat., VIII, p. 195.

Nortonia colocolo Kohl, 1907, Denkschr. Ak. Wiss. Wien, Math.—Naturw. Kl., LXXI, p. 249 (saw types of *O. cyrtogaster* Schletterer). Zavattari, 1912, Arch. f. Naturgesch., LXXVIII, Abt. A, Heft 4, p. 168 (female, male; Rengo; Baños de Longaví, Parral).

Odynerus (Leionotus) excipiens H. de Saussure, 1853, Et. Fam. Vesp., I, p. 161, Pl. XVII, figs. 4, 4a-b (female-male). Not of Spinola, 1851.

Odynerus (Hypodynerus) excipiens H. de Saussure, 1855, Et. Fam. Vesp., III, p. 227 (with *colocolo* as a variety); 1875, Smithson. Miscell. Coll., N.º 254, p. 220 (female-male). Brèthes, 1903, An. Mus. Nac. Buenos Aires, IX, p. 288 (Lago Nahuel-Huapi, Puerto Moreno, Argentina); 1910, Rev. Chilena Hist. Nat., XIV, p. 145 (Santiago).

Nortonia excipienda Brèthes, 1918, Rev. Chilena Hist. Nat., XXII, p. 161 (Río Blanco); 1920, Ann. Soc. Ent. France, LXXXVIII, (1919), p. 396 (Valdivia).

Odynerus (Leionotus) cyrtogaster Schletterer, 1891, Entom. Nachrichten, XVII, p. 89 (female; Chile). Dalla Torre, 1904, Gen. Insect., Vesp., p. 43 Porter, 1904, Rev. Chilena Hist. Nat., VIII, p. 195.

Odynerus cyrtogaster Dalla Torre, 1894, Cat. Hym., IX, p. 63.

The species is found in Chile and the adjoining Andes of Argentina. We have seen many specimens from Vilches; Bellavista, Mulchén; Rofuco; Hacienda Las Mercedas; Limache; Concepción; Valdivia; Valparaíso; Tolhuaca; San Rosendo, Concepción; Osorno; Marga-Marga; Chiloé Id.; Santiago. The senior author (J. B.) has also seen it from Argentina: Correntoso, Lake Nahuel-Huapi.

The habits were described by Hermano Claude-Joseph. The female builds free, more or less barrel-shaped clay cells, placed inside a cavity. If this is a narrow gallery, the cells are placed in linear series; if the cavity is broader, they are more cup-shaped and are bunched together. The main entrance to the cavity sheltering the cells is eventually plugged up with clay. Caterpillars are stored as prey.

As pointed out by E. C. Reed, this species was later mistaken by de Saussure for *excipendus*, because he had redescribed the true *excipendus* as *O. arcuatus*. Since the original description of *colocolo* states: "el segundo segmento más ancho que largo, con un fuerte tubérculo encima de su medio", the name *colocolo* must be retained for the species with humped second tergite. No doubt owing to de Saussure's confusion, true *colocolo* was described again as *O. cyrtogaster* Schletterer. Kohl (1907) correctly synonymized these two. The types of *colocolo* should be at the Paris Museum; the type of *cyrtogaster* is at the Vienna Museum.

The number of abdominal creamy white fasciae varies from one to two or more.

Since Brèthes (1906) listed also "*Od. arcuatus* Sauss.", it may be supposed that his *O. excipendus* of 1903 and 1920, was de Saussure's *excipendus*, not Spinola's species of that name. This conclusion is supported by the specimens of true *colocolo* which the senior author (J. B.) has seen from Lake Nahuel-Huapi.

Hypodynerus excipendus (Spinola)

Eumenes excipienda Spinola, 1851, in Gay, Historia

Fis. Pol. Chile, Zool., VI, p. 266 (female-male; Chile: "en varias partes").

Odynerus excipiendus F. Smith, 1857, Cat. Hym. Brit. Mus., V, p. 76. E. C. Reed, 1893, An. Univ. Chile, LXXXIV, Mem. Cientif. Lit., p. 886 (male); 1894, Proc. Zool. Soc. London, (1893), p. 686. Dalla Torre, 1894, Cat. Hym., IX, p. 66.

Odynerus (Lionotus) excipiendus Dalla Torre, 1904, Gen. Insect., Vesp., p. 44. Porter, 1904, Rev. Chilena Hist. Nat., VIII, p. 195.

Nortonia excipienda Kohl, 1907, Denkschr. Ak. Wiss. Wien, Math.—Naturw. Kl., LXXI, p. 249. Zavattari, 1912, Arch. f. Naturgesch., LXXVIII, Abt. A, Heft 4, p. 167 (male).

Odynerus (Leionotus) arcuatus H. de Saussure, 1853, Et. Fam. Vesp., I, p. 160 (female-male; Chile: Sta. Rosa).

Odynerus arcuatus F. Smith, 1857, Cat. Hym. Brit. Mus., V, p. 77. Dalla Torre, 1894, Cat. Hym., IX, p. 54. Brèthes, 1906, An. Mus. Nac. Buenos Aires, (3) VI, p. 366 (Tafi, 2,000 m., Tucumán, Prov., Argentina).

Odynerus (Hypodynerus) arcuatus H. de Saussure, 1855, Et. Fam. Vesp., III, p. 226; 1875, Smithson. Miscell. Coll., N.º 254, p. 219 (female, male).

Odynerus (Lionotus) arcuatus Dalla Torre, 1904, Gen. Insect., Vesp., p. 40. Porter, 1904, Rev. Chilena Hist. Nat., VIII, p. 195.

This species occurs in Chile and the Andes of the adjoining Argentinian province of Mendoza. It is rarer than *H. colocolo*. We have seen specimens from Hacienda Las Mercedes; Santiago; Valparaíso; Tolhuaca; Limache.

The habits are as yet unknown.

Spinola evidently confused several species under his *E. excipienda*; but, as he does not mention the hump of the second tergite in his detailed description of the typical form, his name should be applied to the species which de Saussure later described as *O. arcuatus*. Of his three varieties, the first, "macho semejante al tipo, protórax enteramente negro", may have been *H. colocolo*, where this coloration is more frequent than in the species we call *H. excipiendus*. Zavattari (1912) states that Spinola's collection contains under "*excipienda*" specimens with and others without hump on the second tergite. The second variety, "hembra semejante a la var. *a*, protórax ferruginoso", was probably *H. tuberculatus* (de Saussure). The third variety, "hembra semejante a las precedentes, una faja ancha amarilla cos-

teando el borde anterior del profórax, ninguna faja de este color en su borde posterior", may have been *H. coarctatus* (de Saussure).

Spinola's series of types are at least partly at the Turin Museum (Zavattari saw only males). The types of de Saussure's *arcuatus* should be at the Paris Museum.

We have seen a female of *H. excipiendus*, unfortunately without definite locality, lacking all trace of ivory-white markings on head, thorax and abdomen.

Hypodynerus humeralis (Haliday)

Odynerus humeralis Haliday, 1836, Trans. Linn. Soc. London, XVII, pt. 3, p. 324 (female; "Port St. Elena" = Puerto de Santa Elena, Chubut, Patagonia).

Odynerus (*Hypodynerus*) *humeralis* Schrottky, 1903, An. Soc. Cientif. Argentina, LV, p. 178. Brèthes, 1903, An. Mus. Nac. Buenos Aires, IX, p. 290 (female; Mendoza, Argentina). Zavattari, 1912, Arch. f. Naturgesch., LXXVIII, Abt. A, Heft 4, p. 232 (female; Cordillera de Mendoza).

Hypodynerus humeralis Schrottky, 1909, An. Soc. Cientif. Argentina, LXVIII, p. 239 (Catamarca, Argentina).

There can be no doubt that *H. humeralis* has been misidentified by Chilean authors. All specimens we have seen thus far from Chile are *H. chiliensis*, which is readily distinguished by the characters given in the key. It is not impossible, however, that true *humeralis* may yet be discovered in extreme southern Chile. The senior author (J. B.) has seen two males and one female of true *humeralis* from Mendoza, Argentina. The species is known also from Patagonia and the Province of Catamarca. The supposed occurrence in "Colombia" was based on de Saussure's confusion of Sa. Elena in Patagonia with Sa. Elena on the coast of Ecuador, as pointed out by Zavattari.

The type (female) of *O. humeralis* was seen by de Saussure in Haliday's collection at the Linnaean Society of London and should now be at the British Museum.

The male does not appear to have been described. It is so different from that of *O. chiliensis* that any confusion is out of the question. It is even larger than that of *chiliensis*. The mid-femora are flattened from the sides and from below into a prism with rounded edges; at the basal third the anterior edge of the prism is strongly produced below into a broadly rounded obtuse angle; the lower face

of the prism is flat over the apical half, slightly and obliquely excavated over basal half, where it is covered with a dense brush of soft, short hairs. The clypeus is pale yellow and entirely covered with short, appressed, silvery-white hairs; but its shape differs little from that of the female, its apical margin being very slightly curved inward, with broadly rounded lateral angles (in *O. chiliensis* the clypeus is deeply emarginate at apex, with sharp lateral teeth). The hook-like thirteenth segment of the antennae is longer, more curved and much more slender than in *O. chiliensis*, shaped like the talon of bird of prey. Seventh abdominal sternite with a deep and broad, smooth hollow, bordered by sharp crests which are strongly raised and somewhat toothed at the base; fifth and sixth sternites covered with dense brushes of long, erect, black hairs. The allotype is a male from Mendoza, Argentina, at the Museum of Comparative Zoology, Cambridge, Mass.

Hypodynerus labiatus (Haliday)

Odynerus labiatus Haliday, 1836, Trans. Linn. Soc. London, XVII, pt. 3, p. 324 (female-male; "Port St. Elena"—Puerto de Santa Elena, Chubut, Patagonia). F. Smith, 1857, Cat. Hym. Brit. Mus., V, p. 76. Kohl, 1905, Verh. Zool. Bot. Ges. Wien, LV, p. 341 (type of *O. rhodopterus*).

Odynerus (*Hypodynerus*) *labiatus* Berg, 1900, Comun. Mus. Nac. Buenos Aires, I, p. 239 (female; Filaret, Tierra del Fuego, 53° S.; 68° 20' W., Argentina).

Odynerus molinae H. de Saussure, 1851, in Gay, Historia Fis. Pol. Chile, Zool., VI, p. 562 (female; Chile: "en las provincias centrales"). E. C. Reed, 1893, An. Univ. Chile, LXXXIV, Mem. Cientif. Lit., p. 888; 1894, Proc. Zool. Soc. London, (1893), p. 687. Dalla Torre, Cat. Hym., IX, p. 79.

Odynerus (*Hypodynerus*) *molinae* H. de Saussure, 1875, Smithson. Miscell. Coll., N.º 254, p. 222 (female).

Odynerus (*Lionotus*) *molinae* Dalla Torre, 1904, Gen. Insect., Vesp., p. 49. Porter, 1904, Rev. Chilena Hist. Nat., VIII, p. 196.

?*Hypodynerus molinae* Jörgensen, 1912, An. Mus. Nac. Buenos Aires, XXII, p. 297 (Pedregal; Chacras de Coria; La Paz; Mendoza; all in Argentina).

Odynerus (*Odynerus*, *Hypodynerus*) *molinius* H. de Saussure, 1855, Et. Fam. Vesp., III, pp. 226 and 251 (female).

Odynerus molinus F. Smith, 1857, Cat. Hym. Brit. Mus., V, p. 78.

Odynerus (Leionotus) rhodopterus Schletterer, 1891, Entom. Nachrichten, XVII, p. 92 (female; Chile).

Odynerus rhodopterus, Dalla Torre, 1894, Cat. Hym., IX, p. 93.

Odynerus (Lionotus) rhodopterus Dalla Torre, 1904, Gen. Insect., Vesp., p. 53. Porter, 1904, Rev. Chilena Hist. Nat., VIII, p. 196.

This species has apparently about the same distribution as *H. lachesis*. We have seen it from Termas de Chillán; Río Blanco; Santiago; Temuco; Lonquimay; Bío-Bío; Tolhuaca; and Antofagasta. The senior author (J. B.) has also seen specimens from Argentina: Mendoza; Puente del Inca, Mendoza, 8,200 ft.; Catamarca; and Neuquén.

After studying over a hundred Chilean specimens of both sexes of so-called "*O. labiatus*", we have reached the conclusion that two distinct, though closely allied species have been confused under this name. For one of these we retain Haliday's name *labiatus*; for the other we adopt Lepeletier's name *lachesis*; these being the two oldest of the eight available names. The proposed synonymy is tentative, pending a careful study of the types.

In the female of the species here called *labiatus*, the clypeus (Fig. 2-A) is conspicuously narrowed apically; the apical edge is strongly produced, with prominent, though broad and bluntly rounded angles, and a decided inward curve between them; from each angle starts a blunt ridge, which runs obliquely outward to beyond midlength and defines a strongly flattened median area; the lower, free portion of the clypeus is about as long as the upper, interocular part; mandibles and legs appear to be more slender than in *lachesis*. In the male, the clypeus (Fig. 2-B) is decidedly narrower than in *lachesis*, nearly one and one half times as long as greatest width, with the apical edge about one third of greatest width, distinctly curved inward medially; the lower, free portion about as long as the upper, interocular part; the antennal hook (Fig. 2-C) is more slender and the mandibles are more slender and sharper at the apex than in *lachesis*.

In most Chilean females of our *labiatus*, the clypeus is mostly red, but there is always a black area on each side near the inner orbits; in some specimens the black spreads along the sides to the apical edge; in three females from Antofagasta, the black is more extensive than the red, the latter color being restricted to part of the flattened median

area; these specimens, moreover, have the basal half of the femora and the upper side of the apical five antennal segments black (in the other Chilean females the femora and antennae are entirely red). Finally, three females from Argentina, structurally not separable from Chilean "*labiatus*" have the clypeus entirely black, while the femora and antennae are as in the females from Antofagasta. Having thus observed all passages from a red to a black clypeus, we see no reason why the Chilean specimens could not be referred to Haliday's *labiatus*, the female of which (from Patagonia) had a black clypeus.

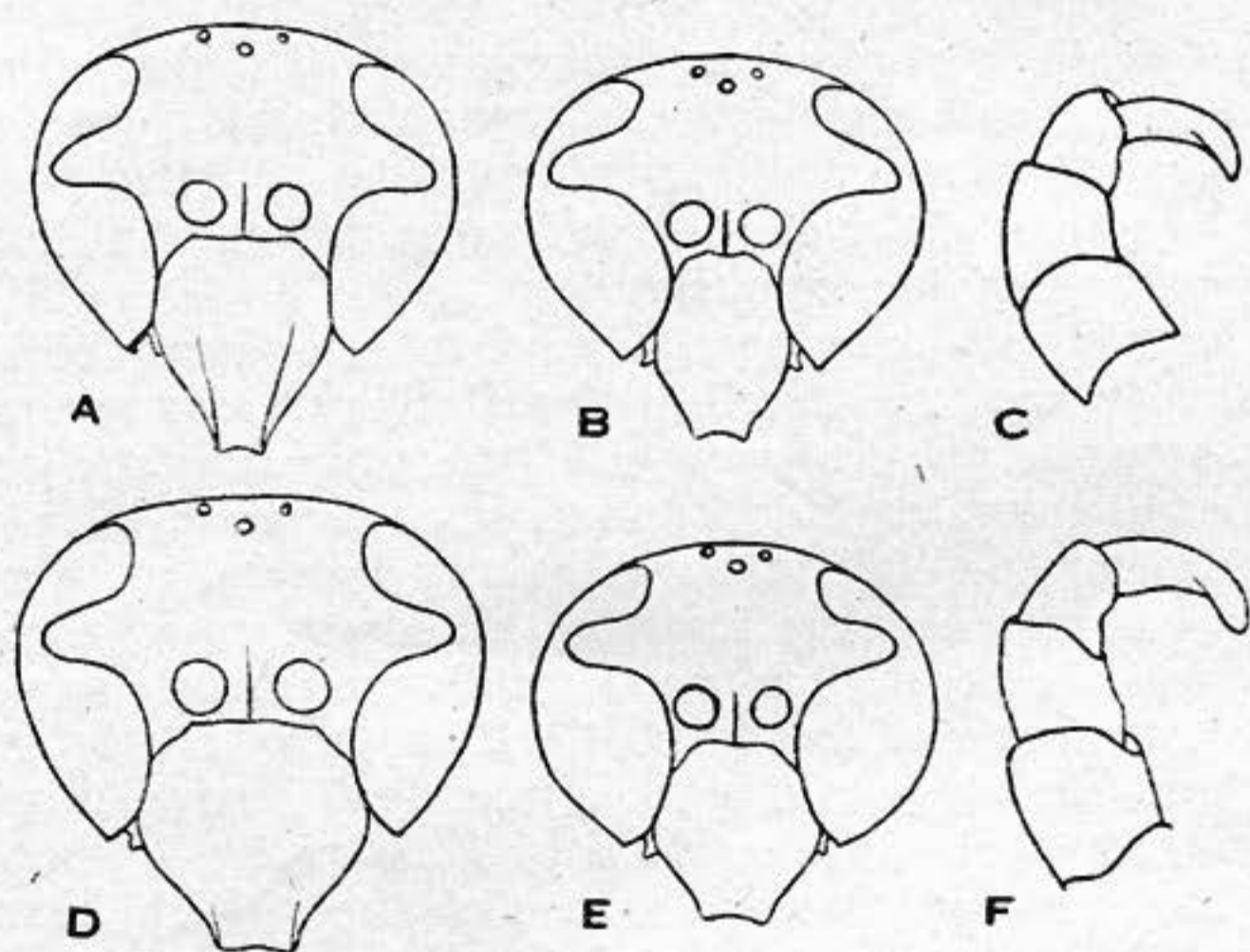


Fig. 2. A—C, *Hypodynerus labiatus* (Haliday): A, head of female in front view; B, head of male in front view; C, apical segments of male antenna from below. D—F, *Hypodynerus lachesis* (Lepelletier): D, head of female in front view; E, head of male in front view; F, apical segments of male antenna from below.

Haliday's original description of *labiatus* was as follows: Male: "Abdominis cingulis duobus, margine prothoracis et clypeo flavis; antennis, pedibus, alarum costa squamulisque rufis. Long. corp. 6 lin. [=12.6 mm.], Alar. 11 lin. [=23.1 mm.]. Ater, capite et thorace subtiliter punctulatis, pube molli nigra obtectis. Antennae mutilatae; articulus primus qui solus superest rufus. Mandibulae apice rufae. Clypeus sulphureus. Prothorax sulphureus, scapulis nigris. Metathorax minus abrupte truncatus quam sequenti, lineola longitudinali elevata. Pedes rufi, coxis nigris. Alae ferrugineae, costa usque in stigma rufa, dehinc fuscae. Alae posticae fere hyalinae. Squamulae ferrugineae. Abdomen

ātrum, segmentis primo et secundo margine flavis, primo pubescente reliquis fere nudis.—Lieut. Graves took a female, and in that sex the clypeus is black". As no structural characters are mentioned in the description, the study of the types alone can definitely settle the identity of the species.

O. molinae de Saussure, based on a female, was clearly what is here called "*labiatus*", since it is stated that it differs from *lachesis* (= *marginicollis*) in the "caperuza menos ancha, más alargada y un poco escotada" (clypeus less wide, more lengthened and a little emarginate). Likewise, there can be little doubt about the identity of Schletterer's *O. rhodopterus*, the clypeus (female) of which is described as "mässig stark gewölbt, nach vorne abgeflacht, gegen den geradlinig abgestutzten Vorderrand hin stark verschmälert und seitlich kantig, im ganzen birnförmig, ein wenig länger als breit".

Nearly all Chilean specimens of *labiatus* have the ivory-white markings as described by Haliday. Sometimes the fasciae on the humeral margin of the pronotum and on the first two abdominal tergites are very narrow. One male from Termas de Chillán has a narrow humeral margin and traces only of an apical fascia on the first tergite, no fascia at all on the second. In northern Argentina, at any rate, there is usually a fascia on the first tergite only, while the pronotum is entirely black. One female from Catamarca, however, is colored as described by Haliday.

The types of *O. labiatus* are at the British Museum; that of *O. Molinae* should be at the Paris Museum and that of *O. rhodopterus* is at the Vienna Museum.

Unclassified References to either *labiatus* or *lachesis*.

O. mapochu Gribobo, *O. maypinus* de Saussure and *O. antuco* de Saussure were based on males only. They are synonyms either of *labiatus* Haliday (in our sense) or of *lachesis* Lepeletier; but without studying the types it is impossible to decide their identity. The references to these names are listed below, together with those of *labiatus* probably based on a mixture of two species.

The types of *O. maypinus* and *O. antuco* are at the Paris Museum; that of *O. mapochu* at the Turin Museum where it was seen by Zavattari.

Odynerus labiatus E. C. Reed, 1893, An. Univ. Chile, LXXXIV, Mem. Cientif. Lit., pp. 874, 883 and 889; 1894, Proc. Zool. Soc. London, (1893), p. 687, Dalla Torre, 1894, Cat. Hym., IX, p. 75. Porter 1899, Bol. Mus. Hist. Nat. Valparaíso, III, N.º 2, p. 14; 1899, Rev. Chilena Hist.

Nat., III, p. 36 (Hijuelas, Prov. Quillota). Brèthes, 1903, An. Mus. Nac. Buenos Aires, IX, p. 289 (Chubut; Neuquén; Mendoza; all in Argentina); 1909, *Op. cit.*, (3) X, p. 457 (Chaeras de Coria, Prov. Mendoza); 1909, *Op. cit.*, (3) XII, p. 104 ("cumbre del Cerro Navarro", 3,000 to 4,000 m., Andes of Mendoza); 1910, Rev. Chilena Hist. Nat., XIV, p. 145 (Santiago). Ruiz, 1924, Rev. Chilena Hist. Nat., XXVII, (1923), p. 103 (San Cristóbal). Hno. Claude-Joseph (H. Janvier), 1924, An. Univ. Chile, (2) II, Art. Cientif. Lit., p. 1053, figs. II-XIII; 1930, Ann. Sci. Nat., Zool., (10) XIII, pt. 2, pp. 292-303, figs. 22-35 (Santiago; Purén in Araucanía; Temuco). Ruiz, 1934, Rev. Chilena Hist. Nat., XXXVIII, p. 167 (Paihuano, Elqui). Ruiz and Stuardo, 1936, *Op. cit.*, XXXIX, (1935), p. 321 (female-male; Termas de Chillán). Ruiz 1937, *Op. cit.*, XL, (1936), p. 165 (Calbuco; Valdivia; Huilo-Huilo; Termas de Manzanares; Termas de Río Blanco; Chillán; Curacautín; Malacahuello; Hacienda Las Mercedes; Santiago; Valle del Choapa; Cuncumen; Vicuña; Illapel; Lonquimay); 1938, *Op. cit.*, XLI, (1937), p. 142 (female; Ovalle); 1938, Revista Universitaria (Santiago de Chile), XXIII, N.º 2, Secc. Acad. Chilena Cienc. Nat., N.º 3, p. 149. Fraga, 1938, Rev. Chilena Hist. Nat., XLI, (1937), p. 200 (Hacienda "Mauro", Dept. Illapel). Ruiz, 1939, *Op. cit.*, XLII, (1938), p. 97.

Odynerus (Hypodynerus) labiatus H. de Saussure, 1855, Et. Fam. Vesp., III, pp. 226 and 228; 1875, Smithson. Miscell. Coll., N.º 254, p. 222 (female-male). Schrottky, 1903, An. Soc. Cientif. Argentina, LV, p. 178. Zavattari, 1912, Arch. f. Naturgesch., LXXVIII, Abt. A, Heft 4, pp. 224 and 228 (female-male; Santiago; Talca; Río Sa. Cruz, Patagonia; saw types of *O. marginicollis*).

Odynerus (Lionotus) labiatus Dalla Torre, 1904, Gen. Insect., Vesp., p. 48. Porter, 1904, Rev. Chilena Hist. Nat., VIII, p. 196.

Odynerus molinae Hno. Claude-Joseph (H. Janvier), 1930, Ann. Sci. Nat., Zool., (10) XIII, pt. 2, pp. 334-339, figs. 64-65 (Purén; Cunco; Temuco).

Odynerus antuco H. de Saussure, 1851, in Gay, Historia Fis. Pol. Chile, Zool., VI, p. 562 (female; Chile, without more definite locality). E. C. Reed, 1893, An. Univ. Chile, LXXXIV, Mem. Cientif. Lit., p. 892; 1894, Proc. Zool. Soc. London, (1893), p. 688. Dalla Torre, 1894, Cat. Hym., IX, p. 53. Delfin, 1900, Rev. Chilena Hist. Nat., IV, p. 20 (Dept. Talcahuano). Brèthes, 1903, An.

Mus. Nac. Buenos Aires, IX, p. 291 (female; Pampa de Boque, Mendoza, Argentina).

Odynerus (Leionotus) antuco H. de Saussure, 1853, Et. Fam. Vesp., I, p. 167 (female). Misspelling of *antuco*.

Odynerus (Hypodynerus) antuco Zavattari, 1912, Arch. f. Naturg., LXXVIII, Abt. A, Heft 4, pp. 224 and 230 (female).

Hypodynerus antuco Jörgensen, 1912, An. Mus. Nac. Buenos Aires, XXII, p. 296 (Mendoza).

Odynerus (Lionotus) antuco Dalla Torre, 1904, Gen. Insect., Vesp., p. 40. Porter, 1904, Rev. Chilena Hist. Nat., VIII, p. 195.

Odynerus (Hypodynerus) antucensis H. de Saussure, 1855, Et. Fam. Vesp., III, pp. 226 and 228; 1875, Smithson, Miscell. Coll., N.º 254, p. 217 and 225 (female).

Odynerus antucensis F. Smith 1857, Cat. Hym. Brit. Mus., V, p. 77.

Odynerus maypinus H. de Saussure, 1851, in Gay, Historia Fis. Pol. Chile Zool., VI, p. 564 (male; Chile, without more definite locality). F. Smith, 1857, Cat. Brit. Mus., V, p. 77. E. C. Reed, 1893, An. Univ. Chile, LXXXIV, Mem. Cientif. Lit., p. 893; 1894, Proc. Zool. Soc. London, (1893), p. 689. Dalla Torre, 1894, Cat. Hym., IX, p. 77. Ruiz and Stuardo, 1936, Rev. Chilena Hist. Nat., XXXIX, (1935), p. 321 (female-male; Termas de Chillán).

Odynerus (Hypodynerus) maypinus H. de Saussure, 1855, Et. Fam. Vesp., III, p. 229 (male); 1875, Smithson, Miscell. Coll., N.º 254, p. 227. Zavattari, 1912, Arch. f. Naturg., LXXVIII, Abt. A., Heft 4, pp. 224 and 230 (female-male).

Odynerus (Lionotus) maypinus Dalla Torre, 1904, Gen. Insect., Vesp., p. 49. Porter, 1904, Rev. Chilena Hist. Nat., VIII, p. 196.

Odynerus (Leionotus) maipinus H. de Saussure, 1853, Et. Fam. Vesp., I, p. 169 (male).

Odynerus mapochu, Gribodo, 1895, Actes Soc. Scientif. Chili, IV, (1894), p. 209 (male; Chile: Parral). Dalla Torre, 1904, Gen. Insect., Vesp., p. 49.

Odynerus (Hoplomerus) mapochu Porter, 1904, Rev. Chilena Hist. Nat., VIII, p. 196.

Odynerus (Leionotus, Hypodynerus) mapochu Zavattari, 1912, Arch. f. Naturgesch., LXXVIII, Abt. A, Heft 4, pp. 224 and 229 (male; Parral, Baños de Longaví).

Hermano Claude-Joseph (1924 and 1930) has published two detailed accounts of the nesting habits of what he calls

“*O. labiatus*” and “*O. molinae*”. It is impossible to refer his observations to one or the other of the two closely allied species recognized by us. Possibly, though, the habits of these two species are similar. The female of his “*O. labiatus*” builds free clay-cells attached to rocks or walls and provided with a funnel-shaped entrance, directed upward. After the cell is closed, the funnel is destroyed by the female. When the cell is built, an egg is laid, attached to the lower inner side (not hung on a thread from the ceiling, as in most other Eumeninae). Caterpillars are then stored as prey. When a number of cells (up to 12) have been built side by side, they are plastered over with mud and the surface is shaped into a series of cup-like flutings, making the whole nest look like old, abandoned cells. “*Ichneumon macrocerus*” Spinola is a common parasite. From Hermano Claude-Joseph’s brief account of his “*O. molinae*”, the habits are essentially the same as those of his “*O. labiatus*”.

Hypodynerus lachesis (Lepeletier)

Odynerus lachesis Lepeletier, 1841, Hist. Nat. Ins. Hym., II, p. 667 (female; Chile).

Odynerus (Leionotus) lachesis H. de Saussure, 1853, Et. Fam. Vesp., I, p. 164, Pl. XVII, fig. 5 (female-male).

Odynerus marginicollis Spinola, 1851, in Gay, Historia Fis. Pol. Chile, Zool., VI, p. 256 (female-male; Santa Rosa and Cóquimbo).

A common species in parts of Chile. We have seen specimens from Hacienda Las Mercedes; Concepción; Viña; Termas de Chillán; Temuco; Baños de Cauquenes; Valparaíso; Santiago; Serena; Maipú; Illapel; Angol; and Hualañé (Curicó). The senior author (J. B.) has also seen a female from Mendoza, Argentina, exactly like the Chilean female of *lachesis*.

This is one of the two species commonly confused in Chile under “*labiatus*”. Lepeletier’s description of *O. lachesis* is as follows: “Tête noire, velue, ses poils noirs: mandibules, chaperon entier et une tache du front ferrugineux; orbite postérieure très-étroite des yeux d’un citron pâle. Bord antérieur du chaperon, presque coupé droit. Antennes ferrugineuses. Prothorax noir, portant en devant une bande d’un citron pâle. Tout le reste du corselet noir: côtes de la plaque postérieure du métathorax tant soit peu rugueux. Poils du corselet rares, noires. Abdomen presque nu, noir: bord postérieur du premier et du deuxième segment portant

une bande assez irrégulière d'un citron pâle: le dessous noir n'ayant que la bande citron du deuxième segment. Anus noir. Pattes ferrugineuses; hanches noires. Ailes d'un roux ferrugineux, avec la partie caractéristique noirâtre ainsi que le limbe; nervures de la base ferrugineuses; celles du bout noires, point marginal brun; écaille ferrugineuse. Femelle, Long. 7 lignes [= 15.6 mm.]" (3) This is, of course, scarcely adequate to decide between the two species involved. H. de Saussure (1853), however, examined the type and from his statement, "Chaperon pyriforme, légèrement concave à son bord antérieur, ses angles arrondis", it evidently was the species with the broader clypeus. We also follow de Saussure in treating *O. marginicollis* Spinola as a synonym of *lachesis* and not of *labiatus*.

In the female of what we call *H. lachesis*, the clypeus (Fig. 2-D) is as wide as long or slightly wider; the apical edge is little produced, broad, straight or barely curved inward, very broadly rounded off at the flat, lateral angles; from each of these starts a short, low, blunt ridge, which does not extend beyond the lower fifth and does not define the slightly flattened median area; the lower, free portion of the clypeus is slightly shorter than the upper, interocular part; mandibles and legs are more robust than in *labiatus*. In the male, the clypeus (Fig. 2-E) is decidedly wider than in *labiatus*, only slightly longer than greatest width, with the apical edge between one-third and one-half of greatest width, very slightly or scarcely curved inward; the lower, free portion is shorter than the upper, interocular part; the antennal hook (Fig. 2-F) is thicker and the mandibles are wider than in *labiatus*.

In all females seen (including the one from Mendoza), the clypeus is red except for very narrow areas along the inner orbits; the entire antennae, mandibles, tegulae and legs (except coxae and trochanters) are red. In most specimens the ivory-white markings are as described by Lepeletier. One female from Termas de Chillán lacks ivory-white on the pronotum (which instead is somewhat reddish in the middle) and the abdominal fasciae are very narrow (that of the first tergite somewhat reddish). One female and one male, also from Termas de Chillán, lack all trace of ivory-white on thorax and abdomen; structurally, however, they do not differ from the normally marked *lachesis*.

(3) The Latin description is omitted, as the French is a literal translation.

The holotype (female) of *lachesis* should be at the Paris Museum. The types (female-male) of *marginicollis* are at the Turin Museum, where they were seen by Zavattari.

Hypodynerus obscuripennis (Spinola)

Odynerus obscuripennis Spinola, 1851, in Gay, Historia Fis. Pol. Chile, Zool., VI, p. 259 (female; Chile: "en las cordilleras bajas de Coquimbo"). F. Smith, 1857, Cat. Hym. Brit. Mus., V, p. 76. E. C. Reed, 1893, An. Univ. Chile, LXXXIV, Mem. Cientif. Lit., p. 891; 1894, Proc. Zool. Soc. London, (1893), p. 688. Dalla Torre, 1894, Cat. Hym., IX, p. 83. R. du Buysson, 1913, Mission Mes. Arc. Mérid. Equat. Amér. Sud, X, Zool., pt. 1, Ins., p. 11 (female-male).

Odynerus (Leionotus) obscuripennis H. de Saussure, 1853, Et. Fam. Vesp., I, p. 165 (female).

Odynerus (Hypodynerus) obscuripennis H. de Saussure, 1855, Et. Fam. Vesp., III, p. 228; 1875, Smithson. Miscell. Coll., N.o 254, p. 225.

Odynerus (Lionotus) obscuripennis Dalla Torre, 1904, Gen. Insect., Vesp., p. 50. Porter, 1904, Rev. Chilena Hist. Nat., VIII, p. 196.

Odynerus coquimbensis H. de Saussure, 1851, in Gay, Historia Fis. Pol. Chile, Zool., VI, p. 561 (female; Chile, no definite locality given, but supposedly from Coquimbo, as the name implies; apparently based upon the same specimen as Spinola's *obscuripennis*).

This species is doubtfully Chilean. The junior author (F. R. P.) believes that either Gay or Spinola gave an erroneous locality for the type. This type is now at the Paris Museum, where it was studied by R. du Buysson. (4). He stated (in 1913) that it is 16 mm. long. The species is included in our key, because it may perhaps be found in the extreme northern districts of Chile.

Hypodynerus porteri, new species

Medium-sized, black with orange-red legs (mostly), antennae and tegulae; hind margin of pronotum and apical fasciae of first and second segments of abdomen creamy-

(4) This female seems to have been the type of both *obscuripennis* Spinola and *coquimbensis* de Saussure. The head was complete when Spinola saw it, but damaged by the time it reached de Saussure.

white; wings extensively orange-yellow. First tergite stalk-like, swollen medially; second tergite conical; second sternite flat.

Length (h. + th. + t. 1 + 2): female, 10 to 13 mm., of fore wing, 11 to 13 mm.; male, 8.5 mm., of fore wing, 9 mm.

Female.—Head (Fig. 3-B) much wider than high seen in front; seen from above, transverse, about twice as wide as long; occipital margin straight. Cheeks margined by a sharp, evenly curved carina in lower three-quarters, distinctly separated from the eyes by a flat area near the mandibles; at the upper quarter of the head the carina bends abruptly to the occiput and continues as a fine raised line close to the occipital foramen. Inner orbits scarcely farther apart on the vertex than at the clypeus; upper half of frons not swollen. Ocelli in a flattened triangle; posterior pair about as far apart as from the eyes; interocellar area flat; vertex without even a trace of pits or foveae. Antennal sockets about as far apart as from the eyes; area between them strongly raised and with a sharp, even keel. Clypeus broadly pear-shaped, about one and one-half times as wide as long, scarcely convex; disk slightly flattened medially over entire length; apical, free portion shorter than basal, interocular part; apical margin narrow and moderately produced between one-fourth and one-fifth of greatest width of clypeus, with a shallow, obtusely triangular, notch; the lateral angles broadly triangular, bluntly rounded off, not carinate. Antenna: scape slender, moderately curved; flagellum slightly and very gradually swollen to apical third. Mandible about as long as height of eye, straight, rather narrow; apex bluntly pointed, slightly curved; inner cutting edge with three long, low teeth. Palpi as usual. Thorax (Fig. 3-A) scarcely longer than wide seen from above and not more narrowed anteriorly than posteriorly, longer than high in profile. Pronotum slightly narrowed toward humeral margin, which is straight and bears a low fine carina, interrupted over the middle third; carina much stronger on the sides, below the humeral angles, which are broadly rounded off, not prominent; sides of pronotum evenly rounded off, not shouldered. Mesonotum slightly wider than long; posterior third with deep notauli, the area between them swollen and divided by a longitudinal, median depression. Tegulae, scutellum and postscutellum as in other *Hypodynerus*. Mesepisternal suture complete, with sharp, ridge-like aciculations; no trace of prepectal suture. Propodeum short; concavity very shallow, almost flat; sides moderately

swollen; all ridges and lateral angles broadly rounded off. Abdomen (Fig. 3-A) moderately elongate. First segment broadly funnel-shaped, at apex about two-thirds the width of the second; narrow anterior part (petiole) abruptly sloping and with a short but distinct basal stalk; broad posterior part (postpetiole) slightly widened behind, slightly more than twice as wide at apex as long in the middle; edge between petiole and postpetiole strongly swollen into a median, broad, blunt tubercle, behind which the disk is trans-

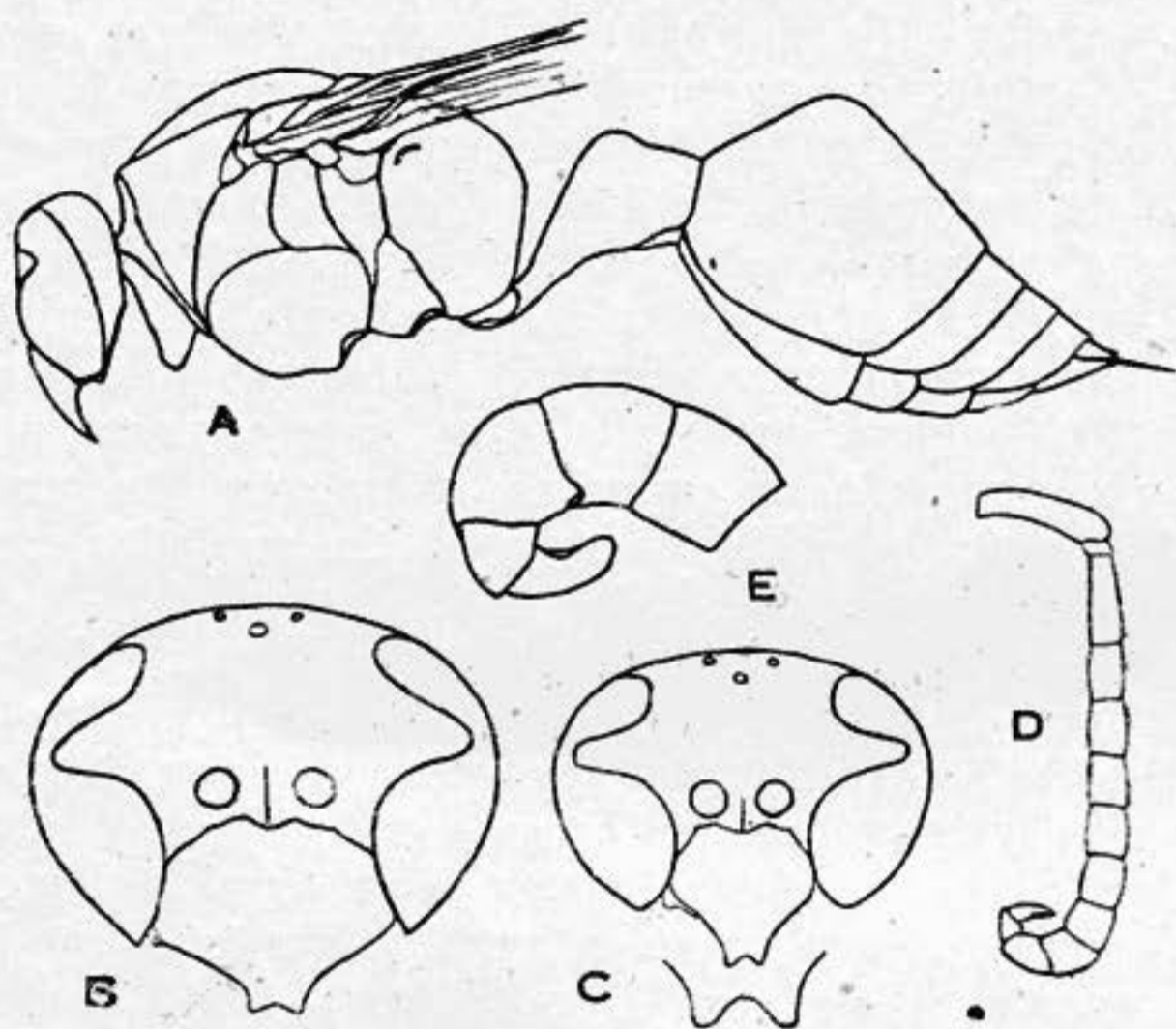


Fig. 3. *Hypodynerus porteri* J. Bequaert and F. Ruiz; A, female holotype in profile; B, head of female holotype in front view; C, head of male allotype in front view and apex of clypeus more enlarged; D, antenna of male allotype; E, apical segments of male antenna from below.

versely depressed and bears a deep, elongate, median pit; apical margin not swollen; spiracles very small, scarcely visible in the coarse punctation. Second tergite about as wide as long, constricted basally, the transverse, post-articular groove with many, regular, strong, longitudinal ribs; the middle gradually, but markedly raised into an obtuse cone, tending to be longitudinally ridged; hind margin flat. Second sternite nearly flat, very gently sloping basally; apical margin flat. Legs normal; tibiae and tarsi with a few, short, scattered spines. Venation normal.

Head and thorax densely covered with large and medium-sized punctures, somewhat more spaced on pron-

tum and vertex, very coarse on propodeum; clypeus with finer, but distinct and sparsely but fairly evenly scattered punctures; tegulae, scape and legs nearly impunctate. First tergite mostly with very large, well-separated punctures, the marginal (creamy-white) area nearly impunctate; second tergite nearly impunctate; second sternite with sparse, fine punctures; succeeding segments impunctate. Pilosity of head, thorax, coxae, femora and abdomen abundant, erect, black.

Black, with the following parts orange-red; entire antennae, tegulae, tibiae, tarsi and apical half or more of femora. A streak on upper outer orbits, narrow hind margin of pronotum and moderately wide apical margins of first tergite and second tergite and sternite, creamy-white. Wing membrane and veins extensively tinged with orange-yellow over basal half and along the costa to include the stigma; the remainder moderately infuscate and strongly purplish, with black veins. In two female paratypes the creamy-white margin of pronotum is reduced to traces in the middle and the apical margin of the second sternite is broadly interrupted.

Male.—Extremely similar to female. Eyes much farther apart on vertex than at clypeus (Fig. 3-C). Clypeus less than one and a half times as wide as long, the apical margin relatively wider, with a slightly deeper obtusely triangular notch. Antennal hook short and thick, with slightly curved, sharp apex in profile, flattened and obliquely truncate at tip seen from below; tenth to twelfth segments somewhat curved in the direction of the hook (Figs. 3 D-E). Femora and tarsi normal. Allotype colored as female, except that the creamy-white margin of pronotum is reduced to the median portion and that the clypeus bears a very large, median creamy-white spot; hook of antenna red. The male paratype has the clypeus and pronotum entirely black and only faint traces of creamy-white apical margins on first and second tergites.

CHILE: Santiago, female holotype, male paratype and seven female paratypes (P. Herbst). Concepción, male allotype and two female paratypes (P. Herbst). Viña del Mar, female paratype (P. Herbst). Quillota, female paratype (P. Herbst). Holotype, allotype and several paratypes at Mus. Comp. Zoöl., Cambridge, Mass. Paratypes in F. Ruiz P. Coll., U. S. National Museum and American Museum of Natural History.

H. colocolo and *H. porteri* are the only known species

of the genus with a conical second tergite. They are readily told apart by the characters given in the key. There is also a decided difference in the shape of the clypeus in both sexes, as well as in the antennal hook of the male. *H. porteri* is certainly not *O. cyrtogaster* Schletterer, as the author mentions expressly the black antennae, partly reddish beneath, and the absence of a median hump on the first tergite.

Hypodynerus ruficollis (Spinola)

Odynerus ruficollis Spinola, 1851 in Gay, Historia Fis. Pol. Chile, Zool., VI, p. 259 (female; Chile: "un solo ejemplar que creo de Santa Rosa"). F. Smith, 1857, Cat. Hym. Brit. Mus., V, p. 77. E. C. Reed, 1893, An. Univ. Chile, LXXXIV, Mem. Cientif. Lit., p. 893; Proc. Zool. Soc. London, (1893), p. 689. Dalla Torre, 1894, Cat. Hym., IX, p. 94 [?Brèthes, 1909, An. Mus. Nac. Buenos Aires, (3) X, p. 457 (Cordillera de Mendoza, Argentina)].

Odynerus (Leionotus) ruficollis H. de Saussure, 1853, Et. Fam. Vesp., I, p. 168 (female).

Odynerus (Hypodynerus) ruficollis H. de Saussure, 1855, Et. Fam. Vesp., III, p. 226 (female); 1875, Smithson. Miscell. Coll., N.º 254, p. 226 (female). [?Brèthes, 1903, An. Mus. Nac. Buenos Aires, IX, p. 293 (male; Province of Mendoza, Argentina)].

Odynerus (Lionotus) ruficollis Dalla Torre, 1904, Gen. Insect., Vesp., p. 53. Porter, 1904, Rev. Chilena Hist. Nat., VIII, p. 196.

[? *Hypodynerus ruficollis* Jörgensen, 1912, An. Mus. Nac. Buenos Aires, XXII, p. 297 (common in the region of Mendoza)].

So far as we can trace, this species is known with certainty only from the female type, which should be at the Paris Museum. We have never seen a *Hypodynerus* with red pronotum and entirely red antennae. Possibly the type of *ruficollis* had really the tip of the antenna blackish; even so it could not have been either *H. chiliensis* (which has a black clypeus in female) or *H. humeralis* (which has the lateral ridges of the propodeum well marked and crenulate, and, moreover, does not seem to occur in Chile). *H. ruficollis* is probably a valid, but very rare or local species, which should be especially searched for by Chilean entomologists.

The specimens from Argentina called *ruficollis* by Brèthes and Jörgensen were almost certainly either *H. humeralis* or *H. brethesi* Jörgensen (1912, An. Mus. Nac. Buenos Aires, XXII, p. 297; new name for *Odynerus*

(*Hypodynerus*) *joergenseni* Brèthes, 1910; not *Hypodynerus joergenseni* Schrottky, 1909), both of which are common in the region of Mendoza. The males described by Brèthes lacked the tips of the antennae, so that we do not know whether these were entirely red. In his key (1903, *Op. cit.*, p. 317) Brèthes separates *humeralis* and *ruficollis* on size only (20 mm. long in *humeralis*, 12 mm. long in *ruficollis*), his supposed *ruficollis* being then most probably males of *brethesi*. On the other hand Jörgensen's specimens were probably *humeralis*, which he does not mention, while he lists *brethesi*.

The type of *O. ruficollis* may be at the Turin Museum, although it is not mentioned by Zavattari.

Hypodynerus tuberculatus (H. de Saussure)

Odynerus tuberculatus H. de Saussure, 1851, in Gay, *Historia Fis. Pol. Chile, Zool.*, VI, p. 564 (female-male; Chile). F. Smith, 1857, *Cat. Hym. Brit. Mus.*, V, p. 76. E. C. Reed, 1893, *An. Univ. Chile*, LXXXIV, *Mem. Cientif. Lit.*, p. 887 (female); 1894, *Proc. Zool. Soc. London* (1893), p. 687. Dalla Torre, 1894, *Cat. Hym.*, IX, p. 103.

Odynerus (Lionotus) tuberculatus H. de Saussure, 1853, *Et. Fam. Vesp.*, I, p. 163 (female-male).

Odynerus (Hypodynerus) tuberculatus H. de Saussure, 1855, *Et. Fam. Vesp.*, III, p. 228; 1875, *Smithson. Miscell. Coll.*, N.º 254, p. 221 (female-male).

Odynerus (Lionotus) tuberculatus Dalla Torre, 1904, *Gen. Insect., Vesp.*, p. 56. Porter, 1904, *Rev. Chilena Hist. Nat.*, VIII, p. 197.

Nortonia tuberculata Kohl, 1907, *Denkschr. Ak. Wiss. Wien, Math.—Naturw. Kl.*, LXXI, p. 249.

This species is peculiar to Chile, where it is not very common. We have seen both sexes from Concepción; Prov. Valparaíso; Limache; Hacienda Las Mercedes; and Peñalolén, Prov. Santiago. It seems restricted to Central Chile.

The types should be at the Paris Museum.

The habits are unknown.

The postscutellum is extensively ivory-white in the female and entirely black in the male, as described by de Saussure. The clypeus is black in the female; ivory-white in the male and shallowly or slightly emarginate with sharp lateral edges.

Hypodynerus tuberculiventris (Spinola)

Eumenes tuberculiventris Spinola, 1851, in Gay, *Historia Fis. Pol. Chile, Zool.*, VI, p. 267 (female-male; Chile: "Illapel, etc.").

Odynerus (Leionotus) tuberculiventris H. de Saussure 1853, Et. Fam. Vesp., I, p. 162 (female-male).

Odynerus (Hypodynerus) tuberculiventris H. de Saussure, 1855, Et. Fam. Vesp., III, p. 227 (Coquimbo; Tuapel [misspelling of Illapel?]); 1875, Smithson. Miscell. Coll., N.º 254, p. 22 (female-male). Brèthes, 1903, An. Mus. Nac. Buenos Aires, IX, p. 288 (female; San Jorge, Sta. Cruz, Argentina).

Odynerus tuberculiventris F. Smith, 1857, Cat. Hym. Brit. Mus., V, p. 76. E. C. Reed, 1893, An. Univ. Chile, LXXXIV, Mem. Cientif. Lit., p. 888 (female-male; common in Central Chile); 1894, Proc. Zool. Soc. London, (1893), p. 687. Dalla Torre, 1894, Cat. Hym., IX, p. 103. Kohl, 1905, Verh. Zool. Bot. Ges. Wien, LV, p. 341 (saw types of *O. psilothorax*), Ruiz, 1924, Rev. Chilena Hist. Nat., XXVII, (1923), p. 103 (San Cristóbal). F. Claude-Joseph, 1930, Ann. Sci. Nat. Zool., (10) XIII, pt. 2, p. 340 (Peñalolén near Santiago).

Odynerus (Lionotus) tuberculiventris Dalla Torre, 1904, Gen. Insect., Vesp., p. 56. Porter, 1904, Rev. Chilena Hist. Nat., VIII, p. 197.

Nortonia tuberculiventris Zavattari, 1912, Arch. f. Naturgesch., LXXVIII, Abt. A, Heft 4, p. 169, Pl. II, fig. 49 (female-male; saw Spinola's type; Santiago; Rengo).

Odynerus (Leionotus) psilothorax Schletterer, 1891, Entom. Nachrichten, XVII, p. 87 (female; Chile).

Odynerus psilothorax Dalla Torre, 1894, Cat. Hym., IX, p. 90.

Odynerus (Lionotus) psilothorax Dalla Torre, 1904, Gen. Insect., Vesp., p. 52. Porter, 1904, Rev. Chilena Hist. Nat., VIII, p. 196.

A common species in Central Chile and the adjoining Prov. Sa. Cruz of Argentina. (5). We have seen it from Olmué; Valparaíso; Limache; Santiago; Hacienda Las Mercedes; Panguipulli; Baños de Cauquenes; Viña del Mar; Río Blanco; and Tramuné, Prov. Colchagua.

The type of *tuberculiventris*, at the Turin Museum, was seen by Zavattari; that of *psilothorax* is at the Vienna Museum.

The habits were described by Hermano Claude-Joseph. The female builds isolated clay-cells, either in the open

(5) We assume that Brèthes' specimen from San Jorge, Sa. Cruz, was true *tuberculiventris*, although it should be revised. His later "*tuberculiventris*" from the Cordillera de Mendoza (1909, An. Mus. Nac. Buenos Aires, (3) X, p. 457) was a different species (*Hypodynerus joergenseni* Schrottky, 1909).

against stones, or in small cavities; sometimes in old nests of other wasps. A funnel is built at the entrance.

Hypodynerus vespiformis (Haliday)

Odynerus vespiformis Haliday, 1836, Trans. Lin. Soc. London, XVII, pt. 3, p. 323 (female-male; Chile, without more definite locality). F. Smith, 1857, Cat. Hym. Brit. Mus., V, p. 77. Howard, 1890, Proc. U. S. Nat. Mus., XII, (1889), p. 202. (Sandy Point, Straits of Magellan). E. C. Reed, 1893, An. Univ. Chile, LXXXIV, Mem. Cientif. Lit., p. 893 (female-male); 1894 Proc. Zool. Soc. London, (1893), p. 689. Dalla Torre, 1894, Cat. Hym., IX, p. 104. Porter, 1897, Rev. Chilena Hist. Nat., I, p. 34 (Valparaíso); 1899, Bol. Mus. Hist. Nat. Valparaíso, III, N.º 2, p. 14. Delfin, 1900, Rev. Chilena Hist. Nat., IV, p. 20 (Dept. Talcahuano). Brèthes, 1909, An. Mus. Nac. Buenos Aires, XIX, p. 104 (cumbre del Cerro Navarro, Mendoza, Argentina). Herbst, 1921, Stettin. Ent. Zeitg., LXXXII, p. 106. Ruiz, 1924, Rev. Chilena Hist. Nat., XXVII, (1923), p. 103 (San Cristóbal). F. Claude-Joseph, 1924, An. Univ. Chile, (2) II, Art. Cientif. Lit., p. 1117, figs. XXVII-XXVIII; 1930, Ann. Sci. Nat., Zool., (10) XIII, pt. 2, pp. 313-318, figs. 51-52 (Santiago). Ruiz, 1934, Revista Universitaria, (Santiago de Chile), XIX, N.º 3, p. 289 (Santiago; Ultima Esperanza, Prov. Coquimbo; Aysen; Castro; Ancud; Calbuco; Puerto Montt; Puerto Varas; Rofueca; Osorno; La Unión; Huilo-Huilo; Valdivia; Panguipulli; Valle del Lonquimay; Termas de Manzanares; Tolhuaca; Cura-Cautín; Chillán; Talca, Hacienda Las Mercedes; Valle del Choapa; Vieuña; Caldera); 1937, Rev. Chilena Hist. Nat., XL, (1936), p. 165.

Odynerus (Antodynerus) vespiformis H. de Saussure, 1855, Et. Fam. Vesp., III, p. 244.

Odynerus (Hypodynerus) vespiformis H. de Saussure, 1875, Smithson. Miscell. Coll., N.º 254, p. 227 (female-male). Berg, 1900, Comun. Mus. Buenos Aires, I, p. 240 (female; Tierra del Fuego; Valdivia). Brèthes, 1903, An. Mus. Nac. Buenos Aires, IX, p. 294 (female-male; Tierra del Fuego; Chubut; Puerto Moreno; Neuquén; all in Argentina). Schrottky, 1903, An. Soc. Cientif. Argentina, LV, p. 179. Schulz, 1906, Spolia Hymenopt., p. 220. Zavattari, 1912, Arch. f. Naturg., LXXVIII, Abt. A, Heft 4, pp. 223 and 233 (female-male; saw types of *hirsutulus* and *mutilloides*: Santiago; Concepción; Los Canelos, Longaví, 2,000 m.; Parral, Baños de Longaví; Temuco; Punta Arenas, Patagonia; Uschuaia, Tierra del Fuego).

Hypodynerus vespiformis Jörgensen, 1912, An. Mus. Nac. Buenos Aires, XXII, p. 297 (Mendoza, Argentina).

Odynerus (Lionotus) vespiformis Dalla Torre, 1904, Gen. Insect., Vesp., p. 56. Porter, 1904, Rev. Chilena Hist. Nat., VIII, p. 197.

Odynerus hirsutulus Spinola, 1851, in Gay, Historia Fis. Pol. Chile, Zool., VI, p. 257 (female-male; Chile: Santa Rosa and Coquimbo). R. A. Philippi, 1862, An. Univers. Chile, XXI, pt. 4, p. 413 (Straits of Magellan).

Odynerus (Leionotus) hirsutulus H. de Saussure, 1853, Et. Fam. Vesp., I, p. 212, Pl. XIX, figs. 1, 1a'b (female-male).

Odynerus mutilloides Gribodo, 1895, Actes Soc. Scientif. Chili, IV, (1894), p. 207 (male; Chile: Parral). Dalla Torre, 1904, Gen. Insect., Vesp., p. 50.

Odynerus (Lionotus) mutilloides Porter, 1904, Rev. Chilena Hist. Nat., VIII, p. 196.

Odynerus (Hypodynerus) maypinus Schrottky, 1903, An. Soc. Cientif. Argentina, LV, p. 179 (Chubut, Argentina).

This is a very common Chilean wasp. We have seen many specimens from Isla Mocha; Santiago; Valparaíso; San Rosendo, Concepción; Ensenada, Llanquihue Lake; Magallanes; Butaicura (Chiloé I.); Osorno; Viña del Mar; Tolhuaca; Penco; Angol; Baños de Cauquenes; and Mulchén. The senior author has also seen it from Argentina: Correntoso (Lake Nahuel-Huapi); Bariloche (Río Negro); and Chubut (Patagonia).

H. vespiformis is very variable in color. Most commonly the narrow hind margin of the pronotum and apical margins of first and second tergites and of second sternite are ivory-white. This was the coloration described as typical for the female by Haliday: "Fem. Ater, villosus. Antennae rufae. Prothoracis margo angustissime albicans. Pedes rufi, coxis et basi femorum nigris. Alae ferrugineae, costa a basi usque in stigma rufescente. Squamulae rufae. Abdominis segmenta primum et secundum margine angustissimo albicante". He also describes a female variant with the second tergite entirely black. His males were, however, of the form lacking all white markings on thorax and abdomen: "Mas. Antennarum scapus dorso nigro-lineatus, subtus flavus, clypeus et labrum sulphurei. Thorax et abdomen toti nigri immaculati". Spinola's main description of *O. hirsutulus* was based on the common form, with two abdominal bands; but he also saw most of the variants. (The female with ferruginous clypeus, which he mentions, was either *H.*

labiatus or *H. lachesis*). Gribodo's *O. mutilloides* was based on a black male with only a very narrow fascia on the second tergite. In all females seen the clypeus is entirely black.

The types of *O. vespiformis* are at the British Museum; those of *O. hirsutulus* and of *O. mutilloides* are at the Turin Museum, where they were seen by Zavattari.

The habits were described by Hermano Claude Joseph. The female builds cells inside various cavities, often using abandoned or even inhabited nests of other wasps, particularly of *H. chiliensis* (= *humeralis* of Chilean entomologists) and *H. labiatus* (or *lachesis*). Inside these hollows, cells are set off with thin mud walls. The egg is laid flat in the bottom of the cell and caterpillars are stored on top.

Hypodynerus villosus (H. de Saussure)

Odynerus villosus H. de Saussure, 1851 in Gay, Historia Fis. Pol. Chile, Zool., VI, p. 563 (female; Chile: "en Santa Rosa, etc."). F. Smith, 1857, Cat. Hym. Brit. Mus., V, p. 76. Dalla Torre, 1894, Cat. Hym., IX, p. 104. E. C. Reed, 1893, An. Univ. Chile, LXXXIV, Mem. Cientif. Lit., p. 891; 1894, Proc. Zool. Soc. London, (1893), p. 688.

Odynerus (Lionotus) villosus H. de Saussure, 1853, Et. Fam. Vesp., I, p. 165 (female).

Odynerus (Hypodynerus) villosus H. de Saussure, 1855, Et. Fam. Vesp., III, p. 228; 1875, Smithson. Miscell. Coll., N.º 254, p. 225. Brèthes, 1903, An. Mus. Nac. Buenos Aires, IX, p. 291 (female; Catamarca, Argentina). Schrottky, 1909, An. Soc. Cientif. Argentina, LXVIII, p. 239.

Odynerus (Lionotus) villosus Dalla Torre, 1904, Gen. Insect., Vesp., p. 57. Porter, 1904, Rev. Chilena Hist. Nat., VIII, p. 197.

Of this rare species we have seen two females and one male from Baños del Toro (F. Ruiz P. and P. Herbst), one female labelled "Tolarg".

The females agree with de Saussure's original description, except that the wings are not entirely violaceous black, but somewhat reddish-orange at the extreme base and on the basal half of the costa. The wings are, however, much darker than in the other Chilean *Hypodynerus*. The specimens from Baños del Toro have the thorax entirely black (including tegulae), and an ivory-white apical margin on first and second tergites. The clypeus is black in the female, mostly ivory white in the male. The female from "To-

larg.” has the humeral margin of the pronotum broadly ivory-white.

H. de Saussure originally described the species from two females, but the holotype is the specimen at the Paris Museum. At first he gave no measurements, but in 1853, he gave them as: “Long. $13\frac{1}{2}$ mill.; env. 29 mil.” and “Long. 13 mill.; env. 26 mill.” Our females are 10 mm. long from clypeus to hind margin of second tergite, the fore wing 10 mm.; our male, 9 mm. and 9 mm. respectively.

In 1875, de Saussure suggested that *villosus* was perhaps only a color variant of *obscuripennis*. This appears open to question; at any rate, the Peruvian specimens called *obscuripennis* by the senior author (J. B.), are a very distinct species. The legs of *villosus* do not bear the many spinose setae and the mid femora of the male are perfectly normal.

Brèthes (1903) referred to *villosus* three females from Catamarca, with an ivory-white fascia at the apex of the first tergite only. The identification is perhaps open to question.

Male. (undescribed).— Similar to the female, with which it is readily associated. Lateral ridges of propodeum distinctly crested throughout and at the lateral angles, which are not produced triangularly. Clypeus nearly hexagonal, about as long as greatest width; lower, free portion shorter than upper, interocular part; apical edge about one-third of greatest width, with a distinct shallow inward curve and prominent, blunt lateral angles. Antennal hook rather short, slightly curved and very sharp in side view, evenly wide and with broadly rounded apex seen below. Mid femora normal. Black; extreme tip of mandibles, antennae, tips of femora, tibiae and tarsi, orange-reddish; last segment of mid and hind tarsi somewhat infusate; clypeus (except for the margins) and apical fasciae of first and second tergites and of second sternite, ivory-white. Wings somewhat more orange-reddish than in female.

Length (h. + th. + t. 1 + 2), 9 mm.; of fore wing, 9 mm.

CHILE: Baños del Toro, male allotype, April 13, 1936 (F. Ruiz P.; with female). In collection F. Ruiz P.

The Peruvian wasps discussed under *H. chilotus*, are very close to *H. villosus* and may possibly be a form of this species. There appear to be some differences in the shape of the clypeus of both sexes. The wings are much more extensively orange-reddish, only the tips being infusate.